The U.S. Army Chemical Corps—

An Expansion in Skills and Equipment Is Needed to Support Response to TIM/HAZMAT Release Incidents

By Major James Demyanovich

The skills of the U.S. Army Chemical Corps are beginning to expand from their long-established focus on Cold War-based nuclear, biological, and chemical (NBC) risk assessment and mitigation techniques. The expansion is now on the path of formally addressing and including toxic industrial material (TIM)/hazardous materials (HAZMAT) release events as militarily significant operational risks. TIM release hazards are typically much smaller in scope than the Cold War Era hazards posed by the massive NBC weapons attacks that were expected to strike the forces poised along the border of the former Iron Curtain. Unfortunately, individual TIM releases can occur almost anywhere that there is industrialization; hence, though TIM releases are potentially less impacting than traditional NBC attacks, their potential occurrence is widespread. TIM releases pose operational risks that require NBC defense soldiers to be competent in addressing TIM/HAZMAT releases in a military context, primarily by using civil first responder HAZMAT techniques.

Our most likely adversaries today may not have large stockpiles of NBC weapons or radiological materials or the intent or ability to use them to contaminate large areas. NBC weapons attacks may be very limited in scope and occurrence, if they occur at all. However, a state- or non-state-sponsored adversary may be forced to think creatively and use easy, "quasi-NBC" attack opportunities that are truly asymmetric. Quasi-NBC attacks may mean releasing toxic materials at existing industrial facilities or dispersing toxic materials that were obtained for use as weapons. These materials might be dangerous due to their chemical toxicity, biological infectivity, or radiological intensity and persistency. TIMs are more available for ready use than NBC weapons, and they are common in the industrial world, often existing in plain sight. The Chemical Corps must be positioned to respond with TIM/HAZMAT knowledge, skills, training, and equipment.

The Chemical Corps continues to be the resident expert in chemical, biological, and nuclear warfare defense for the Army. Recently, radiological weapons—those spreading radioactive contamination without a nuclear weapons yield—have emerged as credible concerns. Chemical Corps expertise and tactical force response to radiological weapons releases follow many of the same principles as those of responding to nuclear weapon yield fallout. However, radiological events are more like HAZMAT releases than nuclear detonations. These were straightforward and easily achieved expansions in doctrine, though not necessarily accompanied by a broad expansion of low-level radiation detection equipment. This has yet to fully occur, but it is in the process of occurring. That was, and is, the easy part.

In 2003, the Chemical School commandant began to expand the Corps instructional programs to address more common, and therefore more likely, quasi-NBC hazard environments posed by TIM/HAZMAT events. Historically, the training of chemical soldiers in low-level radiation and low-energy alpha particle contamination and TIM incidents was not widely conducted since the hazards were not considered militarily significant. In many ways, the process of elevating TIM releases to the status of militarily significant has begun. TIM/HAZMAT issues

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must be addressed by expanding the military operational doctrine, training, and equipment to span the breadth of tactical and operational levels in the Army.

Deterrence Through Preparedness

Swift military response is a viable and often available option when responding to a state- or non-state-sponsored adversary's use of NBC weapons. Realistically, however, industrial facility or locally initiated industrial material release "accidents or incidents" will surely complicate and possibly nullify U.S. military options to attack a single adversary with a swift response. With some planning and dedication on the part of an adversary, those accidents or incidents can and will create significant and unexpected events that affect friendly operations.

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Skills and equipment are sorely needed by chemical soldiers and all associated forces operating on or near TIM/HAZMAT industrial facilities and potential material release sites. Chemical soldiers must be prepared to address the command's TIM/HAZMAT concerns through continuous operational monitoring and evaluation—pre- and postrelease event. Friendly force TIM/HAZMAT risk assessments are then formulated along with establishing appropriate active and passive defense and response planning.

The Chemical Corps is beginning to invest time and resources in formalizing TIM/HAZMAT release event training and equipment acquisition. This effort must continue to increase in scope because there are civil HAZMAT processes and procedures that can be applied to military operations without significant invention by the Chemical Corps. Extensive civil first responder HAZMAT training, education, and equipment are available to the military right now.

The military need for civil HAZMAT response education is broad and includes HAZMAT responder training and HAZMAT incident command and control familiarization. The training levels are similar to the differences between NBC reconnaissance force missions and NBC center missions. The first deals with boots-on-the-ground incident response, and the second deals with using all sources of information to integrate (at command level) the command response to TIM/HAZMAT incidents.

Lastly, training must occur parallel with equipping these same trained forces with specialized HAZMAT equipment that may be unique but must be integrated into unit equipment sets.

TIM Release Threats as Real-World Operational Concerns

The entire category of TIM/HAZMAT release scenarios is reflective of a very present asymmetric attack means capable of producing operationally impacting hazards on friendly forces. As a reality, TIM facilities are known to exist in virtually every industrial area in the world, but little has been institutionally taught about them as a professional education topic in the Chemical Corps. Some believed that subject was to be executed by individual chemical soldiers as self-study. Thankfully, the Chemical Corps has begun—through educational efforts at the Chemical School—to become the commander's expert in TIM release events. This expertise is also required for chemical soldiers who have not had the benefit of the Chemical School's addition of TIM/HAZMAT training. In the balance, lives and credibility are on the line, and Corps-led formal education and expertise are required as part of the resident and nonresident educational opportunities.

TIM/HAZMAT: Threat or Reality?

Worldwide TIM/HAZMAT release incidents happen often and most go unnoticed. TIM release incidents are *not* significant events, with rare exceptions. Headlines only capture the big TIM release incidents. Russia's Chernobyl nuclear power reactor fire and destruction occurred in 1986 during a power system test. The Bhopal, India, industrial chemical release occurred because a disgruntled worker placed a small quantity of contamination in a chemical production tank and caused a chemical reaction and toxic release. The results were in the headlines. Thousands of people were permanently evacuated near Chernobyl. High-level radioactive contamination existed in many areas, and plumes of low-level contamination traveled downwind, across Europe, signaling the eventual entombment of the reactor. In India's incident, thousands died and many more were injured in a silent, killing fog that followed the wind.

However, does anyone recall hearing in recent years of the major chlorine release near Las Vegas, Nevada, that required large areas of evacuation due to *tons* of chlorine being released from a storage

facility? Not likely. That is because HAZMAT events of this type come and go with the evening news. How many times have you heard a radio or television news sound bite like this one? *At 8:37 a.m. today, a train with ten HAZMAT cars carrying hydrogen fluoride derailed in the vicinity of Anytown, USA, requiring twenty city blocks to be evacuated for four hours.* This headline gains little attention because civil first responders are trained and equipped to assess the situation properly, estimate the effects, determine the level of protection needed, and produce a hazard estimation of these incidents. The Chemical Corps must be (and will be with continued expansion into TIM/HAZMAT operations) the military expert in this field when it has a similar capability based on training, equipment, expertise, and confidence like that held by civil first responders.

Incorporating Civil First Responder Training Into the Chemical Corps Skill Set

The Chemical Corps can and must continue to review and take advantage of the TIM/HAZMAT operations knowledge that exists in the civil first responder community. In civil HAZMAT operations, TIM release expertise must be professionally obtained from programs of instruction that include course completion standards. HAZMAT first responder skill sets at varying levels of responsibility and action are clearly required by chemical soldiers. There are varying levels of training available to meet the needs of the members of the HAZMAT response force—from the first person on the scene to the person in charge of a civil HAZMAT response: the incident commander. Most notably, these varying levels of civil HAZMAT training may be available and further imported directly into the Chemical School and/or offered via distributed learning courses.

Civil HAZMAT Incident Command

HAZMAT incident command in the United States uses a common basis in standardization among emergency responders. It has a specialized language and structure, but its way of organizing, controlling, and responding to HAZMAT scenes is clearly based on the military aspects of situational awareness, response planning, and asset command and control. It should be no surprise that fire and rescue units organize and operate much like military combat units, with their command posts, reconnaissance forces, commanders, decontamination stations, and casualty evacuation pipelines. However, civil methods and language of operations are often unique and must be understood by and familiar to chemical soldiers. The civil Incident Command System used by first responders makes the senior responding leader the incident commander, and that commander is in charge. Chemical soldiers are well positioned to be the military force command's expert, advising on military support to civil HAZMAT incidents. Chemical soldiers are the right individuals in staffs and headquarters to facilitate a military response to TIM/HAZMAT releases. The concept of response and responsibility for civil incident command must be understood by chemical soldiers in order to facilitate any military force response to a TIM/HAZMAT release incident.

U.S. military operations that occur outside the United States may occur in regions with an operating emergency response infrastructure. Again, chemical soldiers must be educated in the basics of HAZMAT incident response and command to be of value in planning for *any* military support to a TIM/HAZMAT incident. A clear understanding of U.S. civil HAZMAT response command structure clearly empowers chemical soldiers to recommend ways to maximize the U.S. force response, provide credible assistance in a given situation, and preserve the force protection of committed forces.

The Chemical Corps can and must continue to review and take advantage of the TIM/HAZMAT operations knowledge that exists in the civil first responder community.

Civil HAZMAT Incident Training

The Department of Defense has published its own HAZMAT response guidelines for installation response that includes TIMs: Department of Defense Instruction 2000.18, *Department of Defense Installation Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive Emergency Response Guidelines*. Varying skills for HAZMAT response and an overview of the civil Incident Command System must be incorporated into chemical soldier training as much as possible.

One of many sources of managing HAZMAT training is described in a HAZMAT Emergency Preparedness Grant Program document entitled *Guidelines for Public Sector Hazardous Materials Training*. It describes the complex, though attainable, skills required to properly implement HAZMAT training and the levels of HAZMAT training. The document is intended to be a reference manual for training managers and public sector employers and is an excellent overview of HAZMAT training

requirements. Its introduction is available on the Internet at <*http://www.usfa.fema.gov/downloads/pdf/hmep/HMEPIntro.pdf*>.

Guidelines (as this document is known) is organized into subsections that address the broad, general training issues. It describes incident response and first responder awareness with detailed explanations of the roles, responsibilities, and capabilities of first responders, HAZMAT technicians, on-scene incident commanders, and about a dozen other HAZMAT emergency response special topics, including health worker and emergency medical concerns. The *Planning Curriculum Guidelines* section describes how to broaden the knowledge, skills, and attitudes of the broad spectrum of training personnel who are developing or contributing to the development of local HAZMAT response plans. As is clear, the civil first responder community has extensive requirements and training available to address TIM/HAZMAT incidents. Operationally, chemical soldiers must also continue to receive, at various grades, increased levels of this same TIM/HAZMAT training as part of institutional and continuing education.

Equipping Forces to Assess TIM/HAZMAT Releases

Training provides for proper assessment of possible or actual TIM/HAZMAT release incidents. Of critical importance are the "proper tools of the trade." Specialized detection, protection, decontamination, and hazard assessment equipment must be considered for augmentation to unit NBC defense equipment sets and the associated training. Much of the available equipment is ruggedized for firefighter/first responder use. Much of this equipment could be of great use in NBC defense equipment sets in units if it is acquired and trained on before it is needed as additional equipment. This requirement is especially important when contingency plan mission analyses of potential or likely operating areas—from garrison to the forward deployment areas—have significant TIM facility concerns.

Chemical Corps TIM/HAZMAT Release Skills

Chemical Corps HAZMAT expertise and fielding of specialized equipment are needed for adequate military force protection, detection, and decontamination in TIM release incidents. In the civil fire-fighting world, these are HAZMAT incidents. The civil fire-fighting world has training requirements as well as procedures for all who are involved in HAZMAT response, from the first responder conducting on-scene reconnaissance to the on-scene incident commander. These varying levels of expertise are required in the Chemical Corps. The civil fire-fighting HAZMAT response and control training programs can be the Chemical Corps's viable and tactically employable method of HAZMAT/TIM response and control.

Summary

There has been some growth in the Chemical Corps's technical TIM/HAZMAT training or materiel development and acquisition since the Cold War ended. A continued expansion of the Chemical Corps's competencies is required to assess and facilitate an appropriate response to TIM/HAZMAT threats and events. Future Chemical Corps TIM/HAZMAT expertise will complement the existing medical occupational safety and health operational background surveys that are given to assess and document the low levels of former TIM/HAZMAT/NBC materials in our deployment areas. Such training benefits all our forces serving at home and abroad. The expansion of training for all soldiers at the Chemical School has included, for the first time to my knowledge, HAZMAT training. Including this training is an appropriate start in educating our field forces to prepare for and respond to TIM/HAZMAT events. This is clearly due to our current threat environment and our adversaries' use of expedient means to create significant events with toxic materials that are much more available than are traditional NBC weapons and delivery systems.

References

Department of Defense Instruction 2000.18, *Department of Defense Installation Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive Response Guidelines,* 4 December 2002.

Hazardous Materials Emergency Preparedness Grant Program, *Guidelines for Public Sector Hazardous Materials Training,* March 1998.

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